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(54) Bags with plastic fasteners and method of manufacturing the same  
Beutel mit Verschluss aus Kunststoff und Verfahren zu dessen Herstellung  
Sacs avec fermeture en matière plastique et procédé de fabrication de celle-ci

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## Description

## BACKGROUND OF THE INVENTION

## (Field of the Invention)

[0001] This invention relates to a bag provided with a snap-fit type synthetic resin releasable fastener (hereinafter referred to as fastener) and formed by bonding a pair of side gussets folded into the inside of the bag to show a V-shape cross section to the lateral sides of the bag.

## (Prior Art)

[0002] A bag provided with a snap-fit type synthetic resin fastener and formed by bonding a pair of side gussets folded into the inside of the bag to show a V-shaped cross section to the lateral sides of the bag is typically known from Japanese Patent Application Laid-Open No. 6-67161.

[0003] With such a known bag provided with a snap-fit type synthetic resin fastener and formed by bonding a pair of side gussets to the lateral sides of bag, the side gussets are so dimensioned that the upper edges of the side gussets are located below the fastener and the open upper edges of the side gussets are bonded and sealed in such a way that the bag can advantageously be fully opened at the opening.

[0004] However, the advantage of the bag can be utilized only at the opening and its vicinity. In other words, when the bag is opened, the opening located above the fastener can be made very large but the upper edges of the side gussets are projecting into the opening and interfere with any attempt to smoothly fill the bag or take the contents out of the bag. The above known bag is designed to make the upper edges of the side gussets rather small to alleviate this problem at the cost of the capacity of the bag.

[0005] Japanese Patent Application Laid-Open No. 1-14109 filed by the applicant of the present patent application discloses a similar bag trying with a certain extent of success to provide the bag with a large capacity. However, again, the upper edges and their vicinity of the side gussets can nevertheless interfere with any attempt to use the bag so that, in some cases, customer's ask to bond the upper edges of the side gussets to the inner surface of the bag after purchase.

[0006] Japanese Patent Application Laid-Open No. 6-84450 teaches a bag designed to increase the capacity and, at the same time, ensure that the upper edges of the side gussets do not interfere with attempts to use the bag conveniently. However, the disclosed bag uses independent sealing tapes for bonding the fastener and the upper edges of the side gussets separately, thus making the manufacturing process rather cumbersome and costly.

[0007] In view of the above circumstances, it is there-

fore an object of the present invention to provide a bag equipped with a snap-fit type synthetic resin fastener and formed by bonding a pair of side gussets to the lateral sides of the bag that allows to fully utilize a wide opening, provides a large capacity and, at the same time, the upper edges of the side gussets do not interfere with any attempt to fill the bag or take out the contents therefrom smoothly. It is another object of the present invention to provide a method of manufacturing a bag as defined above with a reduced number of components that is less cumbersome and less costly but highly efficient.

[0008] According to an aspect of the invention, the first object of the invention is achieved by providing a bag provided with a snap-fit type synthetic resin fastener and formed by bonding a pair of side gussets folded into the inside of the bag to show a V-shaped cross section to the lateral sides of a front film member and a rear film member of the bag, wherein the front and rear film members have respective thermoadhesive inner layers and the pair of side gussets have respective inner layers thermally adhesive relative to the inner layers of the film members and are related with the outer surface facing inside to show a V-shaped cross section, the upper edges of said side gussets being bonded to the inner surface of either one of the front and rear film members by means of one of a pair of sealing tapes having thermoadhesiveness relative to the inner layers of said film members and the other of the side gussets, characterized in that the tapes are provided respectively with a female profile and a male profile of the snap-fit type fastener.

[0009] Preferably, in a bag according to the invention, said sealing tapes with a fastener have a multilayer structure of resin layers with different melting points.

[0010] Preferably, in a bag provided with a snap-fit type synthetic resin fastener according to the invention, said side gussets are so dimensioned that the upper edges of said side gussets are bonded to the corresponding film member at positions located below and preferably immediately adjacent the fastener on the sealing tapes.

[0011] Alternatively, in a bag provided with a snap-fit type synthetic resin fastener according to the invention, said side gussets are so dimensioned that the upper edges of said side gussets are bonded to the corresponding film member at positions located above and preferably immediately adjacent the fastener on the sealing tapes.

[0012] According to another aspect of the invention, the second object of the invention is achieved by providing a method of manufacturing a bag as defined above, characterized in that it comprises steps of: unrolling a roll of film for the film members having a thermoadhesive layer and producing a pair of vertically separated film members with said thermoadhesive layers facing each other; unrolling a roll of paired sealing tapes provided respectively with a female profile and a male

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profile of a snap-fit type fastener, said female profile and said male profile being engaged with each other, clamping the female profile and the male profile and making the paired sealing tapes run between and in parallel with the vertically separated film members; inserting a pair of side gussets folded to show a V-shaped cross section between one of the film members and the corresponding one of the sealing tapes in a direction perpendicular to the running direction of the film members; adjusting positionally the upper edges of the inserted side gussets relative to the fastener on the sealing tapes and bonding them to the corresponding film member by means of the related sealing tape, while bonding, at the same time, the side gussets, the side sections of the sealing tapes and the film members together; and cutting the top, the bottom and the lateral sides of the film members to predetermined dimensions of the bag.

#### BRIEF DESCRIPTION OF THE DRAWINGS

[0013] FIG. 1 is a partly cut-away schematic front view of an embodiment of bag according to the invention.

[0014] FIG. 2 is a schematic perspective view of the embodiment of FIG. 1 in its expanded condition.

[0015] FIG. 3 is an enlarged schematic cross sectional view of the embodiment of FIG. 1 taken along line B-B.

[0016] FIG. 4 is an enlarged schematic cross sectional view of the embodiment of FIG. 1 taken along line C-C.

[0017] FIG. 5 is an enlarged schematic cross sectional view of the embodiment of FIG. 1 taken along line D-D.

[0018] FIG. 6 is an enlarged schematic cross sectional view of the embodiment of FIG. 1 taken along line E-E.

[0019] FIG. 7 is an enlarged schematic cross sectional view of the embodiment of FIG. 1 taken along line F-F.

[0020] FIG. 8 is an enlarged schematic cross sectional view of the embodiment of FIG. 1 taken along line G-G.

[0021] FIG. 9 is an enlarged schematic cross sectional view of an embodiment obtained by modifying the embodiment of FIG. 8.

[0022] FIG. 10 is an enlarged schematic cross sectional view of another embodiment obtained by modifying the embodiment of FIG. 8.

[0023] FIG. 11 is a partly cut-away schematic front view of another embodiment of bag according to the invention.

[0024] FIG. 12 is an enlarged schematic cross sectional view of the embodiment of FIG. 11 taken along line A-A.

[0025] FIG. 13 is an enlarged schematic cross sectional view of the embodiment of FIG. 11 taken along line B-B.

[0026] FIG. 14 is an enlarged schematic cross sectional view of the embodiment of FIG. 11 taken along line C-C.

[0027] FIG. 15 is an enlarged schematic cross sec-

tional view of the embodiment of FIG. 11 taken along line D-D.

[0028] FIG. 16 is an enlarged schematic cross sectional view of the embodiment of FIG. 11 taken along line E-E.

[0029] FIG. 17 is an enlarged schematic cross sectional view of the embodiment of FIG. 11 taken along line F-F.

[0030] FIG. 18 is an enlarged schematic cross sectional view of the embodiment of FIG. 11 taken along line G-G.

[0031] FIG. 19 is an enlarged schematic cross sectional view of the embodiment of FIG. 11 taken along line H-H.

[0032] FIG. 20 is a schematic front view of yet another embodiment of the invention.

[0033] FIG. 21 is a schematic front view of yet another embodiment of the invention.

[0034] FIG. 22 is a schematic front view of yet another embodiment of the invention.

[0035] FIG. 23 is a schematic side view of a method of manufacturing a bag according to the invention, showing its principal areas.

[0036] FIG. 24 is a schematic plan view of the illustration of FIG. 23.

#### DETAILED DESCRIPTION OF THE PREFERRED EMBODIMENTS

[0037] Now, the present invention will be described in greater detail by referring to the accompanying drawings that illustrate preferred embodiments of the invention. Referring first to FIGS. 1, 2, 11, 12, 20, 21 and 22, a first embodiment of bag according to the invention comprises a front film member 1a and a rear film member 1b, each of which carries a thermochestive resin layer arranged on the inside thereof. The bag also has an opening 2, a fastener 3 arranged along the opening 2 and a pair of notches 7 arranged above the opposite ends of the opening 2 (or a notch 7 arranged above one of the opposite ends of the opening 2) in alignment with a cutting line 6 running above and in parallel with the fastener 3 to facilitate the operation of cutting the bag. Note that the cutting line 6 and the notches (or notch) 7 are provided only when necessary.

[0038] Reference numeral 4 denotes a pair of side gussets whose inner surface is thermally adhesive relative to that of the film members 1a and 1b and each of which is folded between the film members 1a and 1b with the outer surface facing inside to show a V-shaped cross section. The upper edges 4b of the side gussets 4, 4 are thermally adhesive relative to the inner surface of the film members 1a and 1b and that of the side gussets 4, 4 and bonded to the inner surface of either one of the film members 1a and 1b by means of a sealing tape 8 provided either with a female profile 8a or with a male profile 8b of a snap-fit type fastener 3. Note that, for the ease of description, the upper edges of the side

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gussets are bonded to the inner surface of the front film member 1a by means of a sealing tape 8 provided with a female profile 8a of a snap-fit type fastener.

[0036] After bonding the upper edges of the side gussets to inner surface of the front film member 1a by means of a sealing tape 8, each of the side gussets 4, 4 may additionally be bonded to the front film member 1a along an oblique line 4d running from the upper edge 4b of a point close to and below the fastener 3 to a point on the corresponding lateral edge 5 of the front film member 1a.

[0040] From an advantageous manufacturing point of view, the front and rear film members 1a and 1b, the side gussets 4, 4 and the paired sealing tapes 8, 8 provided respectively with a female profile and a male profile of snap-fit type fastener are made of multilayer film having a configuration as described hereinbefore. As shown, for example, in FIGS. 9 and 13, the front and rear film members 1a and 1b comprise an outer film layer 10a and an inner film layer 10b. Similarly, as shown particularly in FIGS. 9 and 13, the side gussets 4, 4 comprise an outer film layer 11a and an inner film layer 11b.

[0041] The inner film layers 10b of the film members and the inner film layers 11b of the side gussets are typically made of a resin material that makes the inner film layers 10b and 10b and the inner film layers 10b, 10b and 11b, 11b thermally highly adhesive relative to each other such as low density polyethylene (hereinafter referred to as LDPE), polypropylene or ethylene acetate vinyl copolymer (hereinafter referred to as EVA), whereas the outer film layers 10a of the film members and the outer film layers 11a of the side gussets are typically made of a monolayer or multilayer material that does not become thermally adhesive under the condition where the inner film layers 10b, 10b and 11b, 11b are thermally bonded and is capable of endowing the bag with certain desired properties including thermal resistance, airtightness, a light screening effect, a flavour retaining effect and mechanical strength. Such a material may be selected from polyester film (hereinafter referred to as PET), polyamide, paper and aluminium foil.

[0042] As shown in FIGS. 9, 10, 12, 14 and 16, each of the paired sealing tapes 8, 8 has a multilayer structure having a thermoadhesive high-melting point layer 8a typically made of straight-chain low density polyethylene (hereinafter referred to as LDPE) on the side where the tapes are to be held in contact with each other and another layer 8b typically made of EVA or LDPE having a melting point lower than that of the layer 8a and a good adhesiveness relative to the inner film layers 10b, 10b of the side gussets 4, 4 and the front film layer 10b of the front film member 1a.

[0043] Due to the fact that the front and rear film members 1a and 1b, the side gussets 4, 4 and the sealing tapes 8, 8 with members of a fastener have a multilayer structure, any two of them can be thermally bonded together excellently at intended surfaces areas under intended conditions, whereas they are effectively prevented

ed from adhering to each other at any unintended surfaces areas under the conditions they are subjected to. For bonding the related edges 5, 5 of the front and rear film members together at areas where the layers 8a, 8a of the sealing tapes 8, 8 put in contact with each other, they will only have to be heated to the melting point of LDPE.

[0044] Thus, when a snap-fit type fastener 3 is fitted onto the inner surface of the bag 1 at the opening 2 as shown in FIGS. 9, 10, 12 and 14, the inner film layer 10b of the front film member 1a, the inner film layers 11b, 11b of the side gussets 4, 4 and the layer 8b of the corresponding one of the paired sealing tapes 8, 8 are excellently bonded together due to the coordination in terms of thermoadhesiveness and the fact that each of the sealing tapes 8 has layers 8a and 8b made of respective thermoadhesive resin materials having different melting points.

[0045] On the other hand, the inner film layer 10b of the rear film member 1b and the layer 8b of the corresponding one of the paired sealing tapes 8, 8 are excellently bonded together due to the coordination in terms of thermoadhesiveness, whereas the layers 8a and 8a of the paired sealing tapes 8, 8 are prevented from being bonded to each other under the above bonding conditions. Thus, the paired sealing tapes 8, 8 provided with respective members of a fastener 3 can be fitted properly onto the inner surface of the bag 1 at the opening 2 so that the fastener 3 will not come off from the inner surface if the bag is subjected to impact or opened and closed repeatedly. Note that L2 in FIGS. 1 and 11 denotes the total length of the opening 2.

[0046] As shown in FIGS. 9, 14 and 16, the inner film layer 11b of each of the side gussets 4, 4 is thermally bonded to the inner film layer 10b of the front film member 1a along the oblique bonding line 4d so that, when the bag 1 is filled with the contents to extend the side gussets 4, 4 as shown in FIG. 2, the oblique bonding lines 4d, 4d alleviate the concentration of stress onto the upper edges 4b, 4b of the side gussets 4, 4 bonded by one of the sealing tapes 8, 8. Since the inner layers of the side gussets 4, 4 are thermally adhesive relative to the inner layers of the front and rear film members 1a and 1b and the upper edges 4b, 4b of the side gussets 4, 4 are bonded to either the front film member 1a or the rear film member 1b by the corresponding one of the sealing tapes 8, 8 provided respectively with the female profile 8a and the male profile 8b of the snap-fit type fastener 3, the positional relationship between the upper edges 4b, 4b of the side gussets 4, 4 and the fastener 3 on the sealing tapes 8, 8 can be modified by selecting appropriate dimensions for the side gussets 4, 4.

[0047] As shown in FIGS. 1 through 6, the side gussets 4, 4 may be so dimensioned that the upper edges 4b, 4b of the side gussets 4, 4 are located below the fastener 3 arranged on the sealing tapes 8, 8. When the upper edges 4b, 4b of the side gussets 4, 4 are located below the fastener 3 arranged on the sealing tapes 8,

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8, the side gussets 4, 4 are extended at positions remote from the fastener 3 with the upper edges 4b, 4c located between them when the bag is filled with the contents.

[0048] FIGS. 9 and 10 illustrate embodiments different from the one shown in FIGS. 1 through 8. In FIG. 9, the sealing tapes 5, 5 are provided respectively with the female profile 5a and the male profile 5b of the snap-fit type fastener 3 have different heights. In FIG. 10, on the other hand, the sealing tapes 5, 5 are bonded to the bag 1 differently. Note that, however, the layered arrangement of the front and rear film members 1a, 1b, the side gussets 4, 4 and the sealing tapes 5, 5 provided with the respective members of the fastener are not limited to the above embodiments and may be modified appropriately to optimize the usability of the bag.

[0049] Alternatively, as shown in FIGS. 11 through 22, the side gussets 4, 4 may be so dimensioned that the upper edges 4b, 4c of the side gussets 4, 4 are located above the fastener 3 arranged on the sealing tapes 5, 5 and hence closer to the opening 2 of the bag 1 and then bonded to the inner surface of either the front film member 1a or the rear film member 1b. FIGS. 11 through 22 show an embodiment where the upper edges 4b, 4c of the side gussets 4, 4 are aligned with the upper edges of the film members 1a and 1b defining the opening 2 of the bag, whereas FIGS. 21 and 22 illustrate several different embodiments where the upper edges 4b, 4c of the side gussets 4, 4 are also located above the fastener 3 arranged on the sealing tapes 5, 5.

[0050] When the upper edges 4b, 4c of the side gussets 4, 4 are located above the fastener 3 arranged on the sealing tapes 5, 5, the side gussets 4, 4 can be made to become extended as protrusions close to the fastener 3 in a well balanced manner to improve the appearance of the bag.

[0051] The above differences in the extended state of the side gussets reflect the fact that the extended state of the side gussets and hence that of the bag as a whole are defined by the positional relationship between the upper edges of the side gussets 4, 4 that are bonded to the inner surface of one of the film members 1a and 1b by means of corresponding one of the sealing tapes 5, 5 and the fastener 3 arranged on the sealing tapes. They are put under stress separately if they are remote from each other, whereas they are collectively and commonly put under stress if they are located closer relative to each other. In other words, the upper edges 4b, 4c of the side gussets 4, 4 are preferably arranged close to the fastener 3 so that the side gussets 4, 4 may be extended at locations close to the fastener 3.

[0052] More specifically, the sealing tapes 5, 5 are preferably bonded in areas located above and close to the fastener 3 to minimize or totally eliminate the bonded areas of the sealing tapes 5, 5 under the fastener 3. (Although, the bonded areas under the fastener 3 are not totally eliminated in any of the illustrated embodiments).

[0053] If the upper edges 4b, 4c of the side gussets 4, 4 are located below the fastener 3, a well balanced

profile can be realized for the bag by bonding the related sealing tape 5 by a length sufficient to make the upper edges 4b, 4c of the side gussets 4, 4 airtight and less likely to become detached.

[0054] When the embodiment of bag shown in FIG. 11 is designed to be filled through the opening 2 of the bag 1 at the top, FIG. 20 shows an embodiment designed to be filled through the bottom 20 of the bag 1. In FIG. 20, reference symbols 5a and 5b denote respectively the bottom area and the top area to be sealed after filling the bag.

[0055] The upper edges of the sealing tapes 5, 5 provided with a fastener are aligned with the opening 2 and the upper edges 4b, 4c of the side gussets 4, 4 in the embodiment shown in FIGS. 11 through 20. Such an arrangement obviates the risk of the thick side gussets 4, 4 producing a pin hole or some other flaw when the bag 1 is sealed at the opening 2. Thus, the bag remains airtight and provides an agreeable appearance.

[0056] FIG. 21 shows an embodiment where in the upper edges 4b, 4c of the side gussets 4, 4 are located above the fastener 3 on the sealing tapes 5, 5 and below the opening 2 of the bag 1. With this arrangement, the bag can be held airtight if the bag is sealed at the opening 2 in such a way that the sealing effect is not affected by the side gussets 4, 4.

[0057] In the embodiment of FIG. 22, the sealing tapes 5, 5 do not cover the upper edges of the side gussets 4, 4, although they do cover the effective upper edges 4b, 4c of the side gussets 4, 4 that appear when the bag of the bag is opened by way of the notches 7, 7. Therefore, the net effect of this embodiment will be practically same as that of the preceding embodiments.

[0058] In the known bag used above and discussed by the applicant of the present patent, the film members of the bag and the snap-fit type fastener are formed integrally and the upper edges of the side gussets are securely fixed to the inside of the bag by means of an independent sealing tape. Therefore, the snap-fit type fastener and the sealing tape have to be manufactured independently, placed in position on the film members of the bag and then bonded firmly to the bag. Thus, the process of manufacturing the bag is rather cumbersome and costly.

[0059] To the contrary, with a bag according to the invention, the sealing tapes 5, 5 for firmly holding the upper edges 4b, 4c of the side gussets 4, 4 to the inside of the bag are provided respectively with a female profile and a male profile of a snap-fit type fastener and therefore manufactured integrally so that the number of the components of the bag is reduced and the process of manufacturing the bag is considerably simplified to improve productivity and reduce manufacturing costs.

[0060] With a method of manufacturing a bag of the type under consideration according to the invention, a roll of film having a thermoadhesive resin layer is unrolled to produce a pair of film members of the bag in such a way that the paired film members are separated

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from each other with the thermoadhesive resin layers facing each other. Referring to FIGS. 23 and 24 illustrating a technique that can be used for the purpose of the invention, the roll of film 20 having a thermoadhesive resin layer is unrolled and folded with the thermoadhesive resin layer located inside and cut along the fold line by means of a cutting edge 22 to produce a pair of film members 1a and 1b.

[0061] Alternatively, a pair of film members 1a and 1b may be produced by using a pair of rolls of film. In this case, the use of a folder plate 21 and a cutting edge 22 is not necessary. The rolls may have a width adapted to the film members of the bag to be produced or, alternatively, they may have a greater width so that a plurality of bags may be produced simultaneously for the purpose of mass production.

[0062] The vertically separated film members 1a and 1b are then moved away from each other by means of feed rollers. Meanwhile, a roll of sealing tapes 5, 6 provided respectively with and put together through the engagement of female 5a and male profiles 5b of fastener 1a is unrolled and the sealing tapes 5, 6 pre-separated from each other by disengaging the female and male profiles 5a and 5b. The sealing tapes are then made to run between and along the upper and lower film members 1a and 1b respectively.

[0063] Then, a pair of side gussets 4 folded to show a V-shaped cross section by means of a folder 23 and cut to given dimensions by a cutter 24 are inserted between the film members 1a and 1b and also between the sealing tapes 5, 6 in a direction perpendicular to the running direction of the film members 1a and 1b and then the upper edges 4a, 4b of the side gussets 4, 4 are temporarily bonded to the corresponding film member after adjusting their positions relative to the fastener 3 on the sealing tapes 5, 6. Then, the upper edges 4a, 4b of the side gussets 4, 4 are securely held in position by means of a pair of sealing bars 25a and 25b and, at the same time, the side gussets 4, 4 and the bases of the sealing tapes 5, 6 are firmly bonded to the film members 1a and 1b.

[0064] Thereafter, the female profile 5a and the male profile 5b of the fastener are made to engage with each other by engaging means 27 and the top, the bottom and the lateral sides of the film members 1a and 1b are bonded and cut to given dimensions to produce a final product of bag by using of known techniques.

#### (Advantages of the invention)

[0065] As described above, with a bag provided with a snap-fit type synthetic resin fastener according to the invention, the side gussets are bonded to the inner surface of either one of the front and rear film members by means of one of a pair of sealing tapes provided respectively with a female profile and a male profile of the snap-fit type fastener and having thermoadhesive resin relative to the inner layers of said film members and the

bases of the side gussets so that, when the bag is opened by disengaging the female profile and the male profile of the fastener, the bag is fully opened along the proper opening of the bag and the contents can be taken out through the opening smoothly without any interference on the part of the upper edges of the side gussets.

[0066] Additionally, since the sealing tapes are realized as a single component and provided with a snap-fit type fastener as an integral part thereof, the number of components of the bag is reduced and the manufacturing process is simplified to improve productivity and reduce manufacturing costs.

[0067] Furthermore, since the upper edges of side gussets are firmly bonded to the inner surface of one of the film members by means of the corresponding one of the sealing tapes, the sealing tapes bear substantially all of the stress that the fastener is subjected to due to the pressure internally applied to the fastener; thus, the fastener is prevented from disengagement and damage. This effect of firm bonding is reinforced when each of the side gussets is additionally bonded to the selected front film member along an oblique line running from the upper edge or a point close to and below the fastener to a point on the corresponding lateral edge of the film member.

[0068] If the sealing tapes with a fastener have a multilayer structure of resin layers with different melting points, the sealing tapes are prevented from adhering to each other when they are bonded to the film members and the side gussets so that consequently, the fastener is prevented from disengagement and damage and the manufacturing process of the bag can be further simplified to improve productivity and reduce manufacturing costs.

[0069] If the side gussets are so dimensioned that their upper edges are bonded to the corresponding film member at positions located above the fastener on the sealing tapes, the side gussets can be made to become extended at positions close to the fastener in a well-balanced manner to improve the appearance of the bag at the retail outlet. Additionally, the capacity of the bag is significantly improved because the side gussets can be extended immediately under the fastener.

[0070] With the upper edges of the side gussets aligned with the opening of the bag, the risk of the thick side gussets producing a pin hole or some other flaw when the bag is sealed at the opening is obviated. Thus, the bag remains alright and provides an agreeable appearance.

[0071] Finally, the method of manufacturing a bag has been described, what is efficient and reduces manufacturing costs.

#### Claims

1. A bag provided with a snap-fit type synthetic resin fastener (3) and formed by bonding a pair of side

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gussets (4) folded into the inside of the bag to show a V-shaped cross section to the lateral sides of a front film member (1a) and a rear film member (1b) of the bag, wherein the front (1a) and rear (1b) film members have respective thermoadhesive inner layers (10a) and the pair of side gussets (4) have respective inner layers (11a) thermally adhesive relative to the inner layers (10a) of the film members (1a, 1b) and are folded with the outer surface facing inside to show a V-shaped cross section, the upper edges (4b) of said side gussets (4) being bonded to the inner surfaces (10a) of either one of the front and rear film members (1a, 1b) by means of one of a pair of sealing tapes (5) having thermoadhesive zones relative to the inner layers (10a) of said film members (1a, 1b) and the other (11b) of the side gussets (4), characterized in that the tapes (5) are provided respectively with a female profile (3a) and a male profile (3b) of the snap-in type fastener (3).

2. A bag according to claim 1, characterized in that said sealing tapes (5) with a fastener (3) have a multi-layer structure of resin layers (8a, 8b) with different melting points.

3. A bag according to claim 1 or 2, characterized in that said side gussets (4) are so dimensioned that the upper edges (4b) of said side gussets (4) are bonded to the corresponding film member (1a, 1b) at positions located below the fastener (3) on the sealing tapes (5).

4. A bag according to claim 1 or 2, characterized in that said side gussets (4) are so dimensioned that the upper edges (4b) of said side gussets (4) are bonded to the corresponding film member (1a, 1b) at positions located above the fastener (3) on the sealing tapes (5).

5. A bag according to claim 3 or claim 4, characterized in that said positions at which the upper edges (4b) of said side gussets (4) are bonded to the corresponding film member (1a, 1b) are located close to said fastener (3).

6. A method of manufacturing a bag as defined in any of claims 1 through 5, characterized in that it comprises steps of: unrolling a roll of film (20) for the film members (1a, 1b) having a thermoadhesive layer (10a) and producing a pair of vertically separated film members (1a, 1b) with said thermoadhesive layers (10a) facing each other; unrolling a roll of paired sealing tapes (5) provided respectively with a female profile (3a) and a male profile (3b) of a snap-in type fastener (3); said female profile (3a) and said male profile (3b) being engaged with each other; elongating the female profile (3a) and the male profile (3b) and making the paired sealing tapes (5)

run between and in parallel with the vertically separated film members (1a, 1b); inserting a pair of side gussets (4) folded to show a V-shaped cross section between one of the film members (1a, 1b) and the corresponding one of the sealing tapes (5) in a direction perpendicular to the running direction of the film members (1a, 1b); adjusting positionally the upper edges (4b) of the inserted side gussets (4) relative to the fastener (3) on the sealing tapes (5) and bonding them to the corresponding film member (1a, 1b) by means of the related sealing tapes (5), while bonding, at the same time, the side gussets (4), the base portions of the sealing tapes (5) and the film members (1a, 1b) together; and cutting the top, the bottom and the lateral sides of the film members (1a, 1b) to predetermined dimensions of the bag.

#### Patentansprüche

1. Beutel, versehen mit einem Quersitz-Schnappverschluss (3) und gebildet durch Verbinden eines Paares von Seitenfalten (4), die damit in die Innenseite des Beutels gefaltet sind, daß sie den lateralen Seiten eines vorderen Faltenteils (1a) und eines hinteren Faltenteils (1b) des Beutels einen V-förmigen Querschnitt darstellen, wobei die vorderen (1a) und hinteren (1b) Faltenteile entsprechende thermoadhäsive Innenschichten (10a) und das Paar von Seitenfalten (4) entsprechende thermoadhäsive Innenschichten (11a) relativ zu den inneren Schichten (10a) der Faltenteile (1a, 1b) aufweisen und mit der äußeren Oberfläche nach innen zugeordnet gefaltet sind, so daß sie einen V-förmigen Querschnitt darstellen, wobei die oberen Kanten (4b) der Seitenfalten (4) mit der inneren Oberfläche (10a) entweder des vorderen oder des hinteren Faltenteils (1a, 1b) verbunden sind, und zwar mittels eines von einem Paar Dichtbänder (5) mit einer Thermo-Aktivschicht relativ zu den inneren Schichten (10a) der Faltenteile (1a, 1b) und denen (11b) der Seitenfalten (4), dadurch gekennzeichnet, daß die Bänder (5) jeweils mit einem weiblichen Profil (3a) und einem männlichen Profil (3b) des Schnappverschlusses (3) versehen sind.

2. Beutel nach Anspruch 1, dadurch gekennzeichnet, daß die Dichtbänder (5) mit einem Befestiger (3) eine Mehrschicht-Struktur von Harzschichten (8a, 8b) mit unterschiedlichen Schmelzpunkten aufweisen.

3. Beutel nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß die Seitenfalten (4) so dimensioniert sind, daß die oberen Kanten (4b) der Seitenfalten (4) mit den entsprechenden Faltenteilen (1a, 1b) an Positionen verbunden sind, die unter dem Ver-

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schluß (3) an den Dichtbänder (8) liegen.

4. Bauteil nach Anspruch 1 oder 2, dadurch gekennzeichnet, daß die Seitenflächen (4) so dimensioniert sind, daß die oberen Kanten (4a) der Seitenflächen (4) mit den entsprechenden Folienteilen (1a, 1b) an Positionen verbunden sind, die über dem Verschluss (3) an den Dichtbändern (8) liegen.

5. Bauteil nach Anspruch 3 oder Anspruch 4, dadurch gekennzeichnet, daß die Positionen, an welchen die oberen Kanten (4a) der Seitenflächen (4) mit den entsprechenden Folienteilen (1a, 1b) verbunden sind, näher dem Verschluss (3) angeordnet sind.

6. Verfahren zur Herstellung eines Bauteils wie in einem der Ansprüche 1 bis 5 definiert, dadurch gekennzeichnet, daß es folgende Verfahrensschritte umfaßt: Abstreifen einer Folie (20) für die Folienteile (1a, 1b) mit einer thermoplastischen Schicht (10a) und Erzeugen eines Paares von verbleibenden Schichten (10b) einander zugeordnet sind; Abstreifen einer Folie Dichtbänder (8), jeweils versehen mit einem weiblichen Profil (3a) bzw. einem männlichen Profil (3b) eines Schnappverschlusses (3), wobei das weibliche Profil (3a) und das männliche Profil (3b) miteinander im Eingriff sind; Ausbringen des weiblichen Profils (3a) und des männlichen Profils (3b) und in Vorlauf-Richtungen der getrennten Dichtbänder (8) zwischen und parallel zu den verbleibenden Folienteilen (1a, 1b); Einsetzen eines Paares von Seitenflächen (4), die definiert sind, daß sie einen V-förmigen Querschnitt zeigen, zwischen eines der Folienteile (1a, 1b) und des entsprechenden Dichtbänder (8) in einer Richtung quer zur Laufrichtung der Folienteile (1a, 1b); gezielte Einwirkung der oberen Kanten (4a) der angesetzten Seitenflächen (4) relativ zu dem Verschluss (3) an den Dichtbändern (8) und Verbinden dieser mit dem betreffenden Folienteil (1a, 1b) mittels des jeweiligen Dichtbänder (8), während des gleichzeitigen Vorwärtsschiebens der Seitenflächen (4), der Basis-Abstreifung der Dichtbänder (8) und der Folienteile (1a, 1b) miteinander sowie Abschneiden der oberen, der unteren und der lateralen Seiten der Folienteile (1a, 1b) auf vorbestimmte Dimensionen des Bauteils.

#### Revendications

1. Sac muni d'une fermeture (3) de type à enclenchement en rebroussement qui réalise un rebroussement d'une paire de replis latéraux (4) repliés vers l'intérieur du sac pour présenter une section transversale en forme de V étant jusqu'aux bords intérieurs d'un élément du film avant (1a) et d'un élément du film ar-

rière (1b) du sac, dans lequel les éléments du film avant (1a) et arrière (1b) ont des couches internes (10a) thermoplastiques respectives et la paire de replis latéraux (4) a des couches internes (11b) respectives thermiquement adhésives par rapport aux couches internes (10a) des éléments du film (1a, 1b) et sont reliés de manière à ce que la surface adhésive soit tournée vers l'intérieur pour présenter une section transversale en forme de V, les bords supérieurs (4a) desdits replis latéraux (4) étant reliés à la surface intérieure (10a) de l'un quelconque des éléments du film avant et arrière (1a, 1b) à l'aide d'un ruban d'une paire de rubans de scellement (8) en relation de thermosoudage par rapport aux couches internes (10b) desdits éléments du film (1a, 1b) et celles (11b) des replis latéraux (4), caractérisé en ce que les rubans (8) sont respectivement munis d'un profil femelle (3a) et d'un profil mâle (3b) de la fermeture du type à enclenchement (3).

2. Sac selon la revendication 1, caractérisé en ce que lesdits rubans de scellement (8) présentent une fermeture (3) ou une structure multidouche de couches de rebroussement (3a, 3b) ayant des points de fusion différents.

3. Sac selon la revendication 1 ou 2, caractérisé en ce que les replis latéraux (4) sont dimensionnés de telle sorte que les bords supérieurs (4a) desdits replis latéraux (4) sont reliés à l'intérieur du film correspondant (1a, 1b) en des emplacements situés en dessous de la fermeture (3) sur les rubans de scellement (8).

4. Sac selon la revendication 1 ou 2, caractérisé en ce que lesdits replis latéraux (4) sont dimensionnés de telle sorte que les bords supérieurs (4a) desdits replis latéraux (4) sont reliés à l'intérieur du film correspondant (1a, 1b) en des emplacements situés au-dessus de la fermeture (3) sur les rubans de scellement (8).

5. Sac selon la revendication 3 ou 4, caractérisé en ce que lesdits emplacements au niveau desquels les bords supérieurs (4a) desdits replis latéraux (4) sont reliés à l'intérieur du film correspondant (1a, 1b) sont situés à proximité de la dite fermeture (3).

6. Procédé de fabrication d'un sac selon l'une quelconque des revendications 1 à 5, caractérisé en ce qu'il comprend les étapes consistant à : dérouler un rouleau de film (20) pour les éléments du film (1a, 1b) ayant une couche thermoplastique (10a) et produire une paire d'éléments du film (1a, 1b) adhésifs verrouillables, lesdites couches thermoplastiques (10a) étant en face les unes des autres; dérouler un rouleau de rubans de scellement appariés (8)



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maris respectivement d'un profil féminin (3a) et d'un profil mâle (3b) d'une fermeture du type à enclenchement (13), ledit profil féminin (3a) et ledit profil mâle étant mis en prise l'un avec l'autre; dé-  
gager le profil féminin (3a) du profil mâle (3b) et faire  
en sorte que les rubans de scellement associés (8)  
s'étendent entre et parallèlement aux éléments de  
film (1a, 1b) adossés verticalement; laisser une  
paire de replis latéraux (4) prêts pour présenter une  
section transversale en forme de V d'un des élé-  
ments de film (1a, 1b) et un ruban correspondant  
des rubans de scellement (8) dans une direction  
perpendiculaire à la direction dans laquelle s'éten-  
dent les éléments de film (1a, 1b); régler compa-  
rément des bords supérieurs (4b) des replis laté-  
raux (4) par rapport à la fermeture (3) sur  
les rubans de scellement (8) et les relier à l'élément  
de film correspondant (1a, 1b) à l'aide du ruban de  
scellement associé (8), tout en reliant en même  
temps les replis latéraux (4), les sections de base  
des rubans de scellement (8) et les éléments de film  
(1a, 1b) ensemble; et découper la partie supérieu-  
re, la base et les bords latéraux des éléments de  
film (1a, 1b) selon des dimensions prédéterminées  
du sac.

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FIG.1

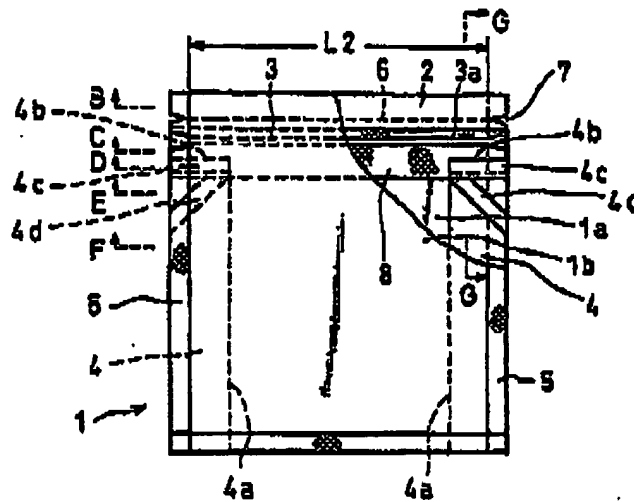
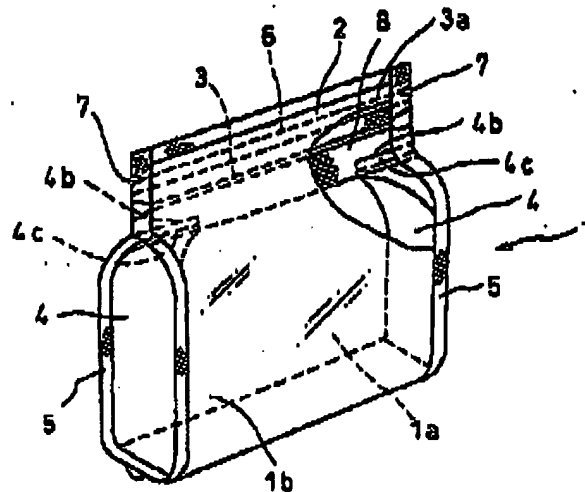


FIG.2



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FIG.3

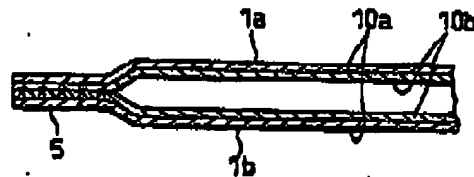


FIG.4

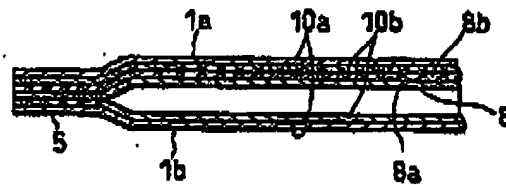


FIG.5

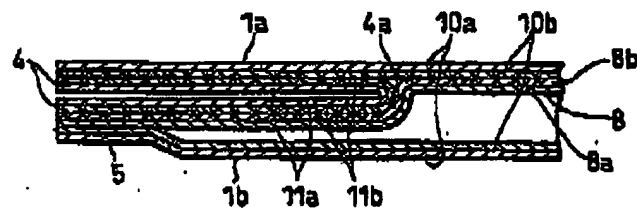
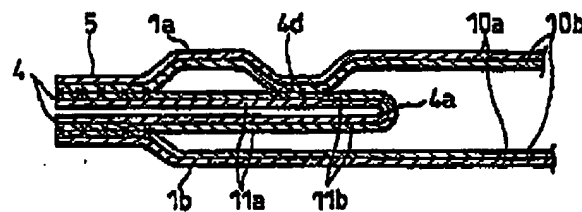


FIG.6



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FIG.7

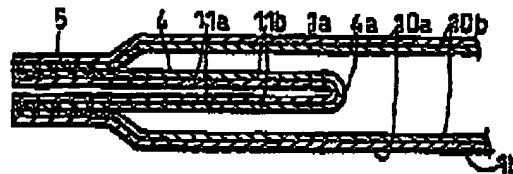


FIG.8

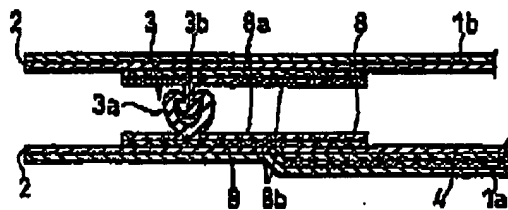


FIG.9

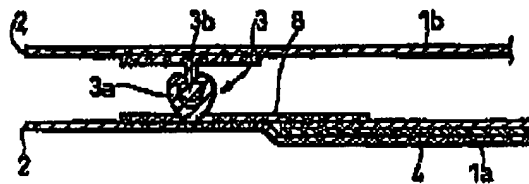
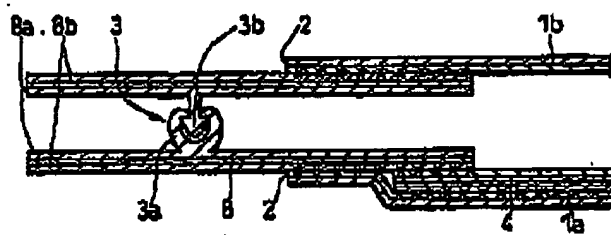


FIG.10



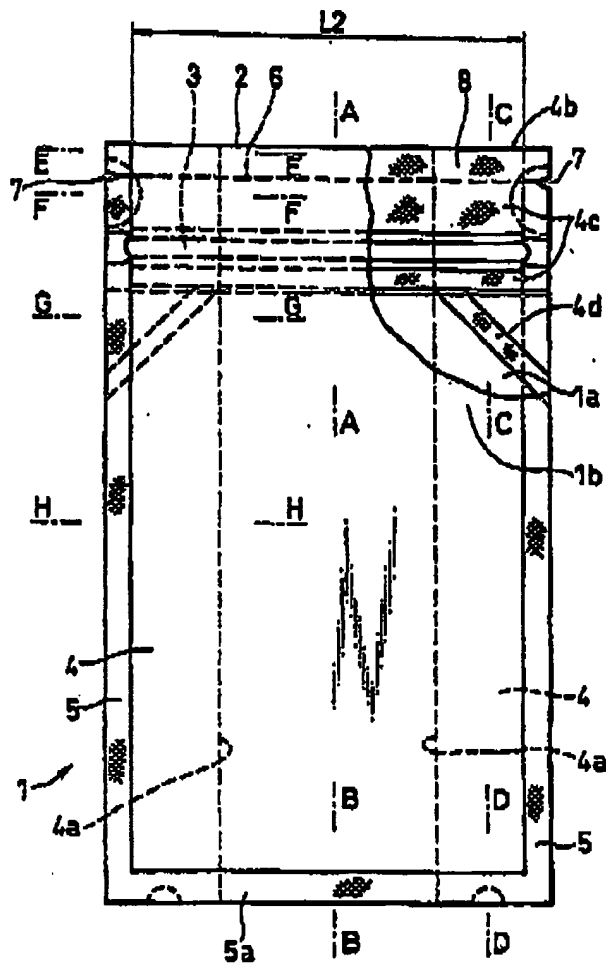
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FIG.11



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FIG.12

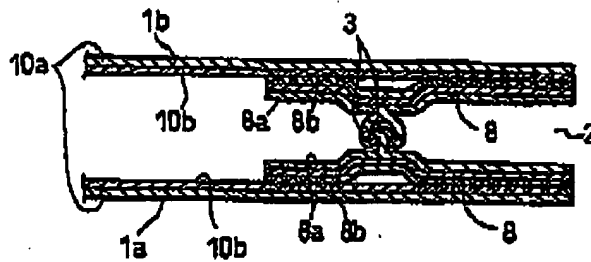


FIG.13

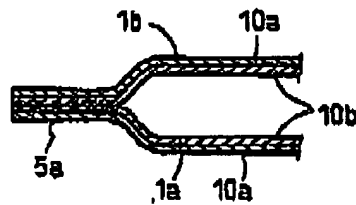
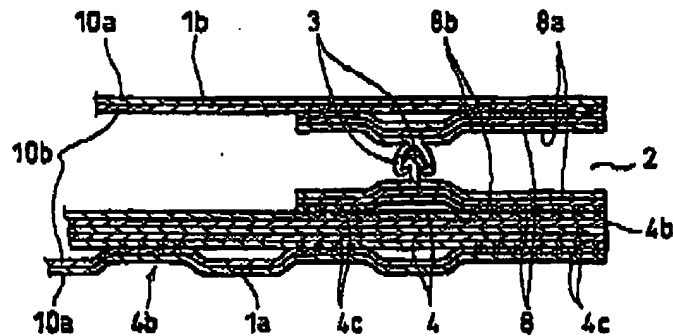


FIG.14



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FIG. 15

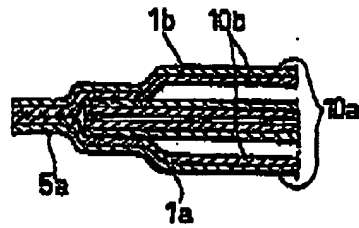


FIG. 16

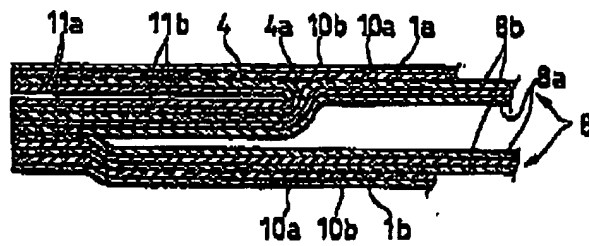
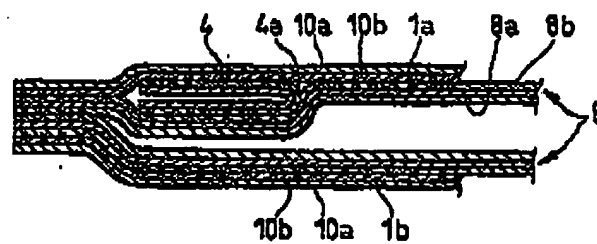


FIG. 17



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FIG.18

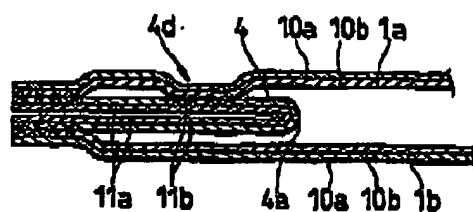
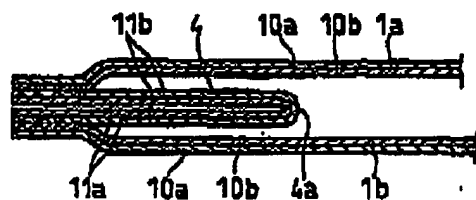


FIG.19





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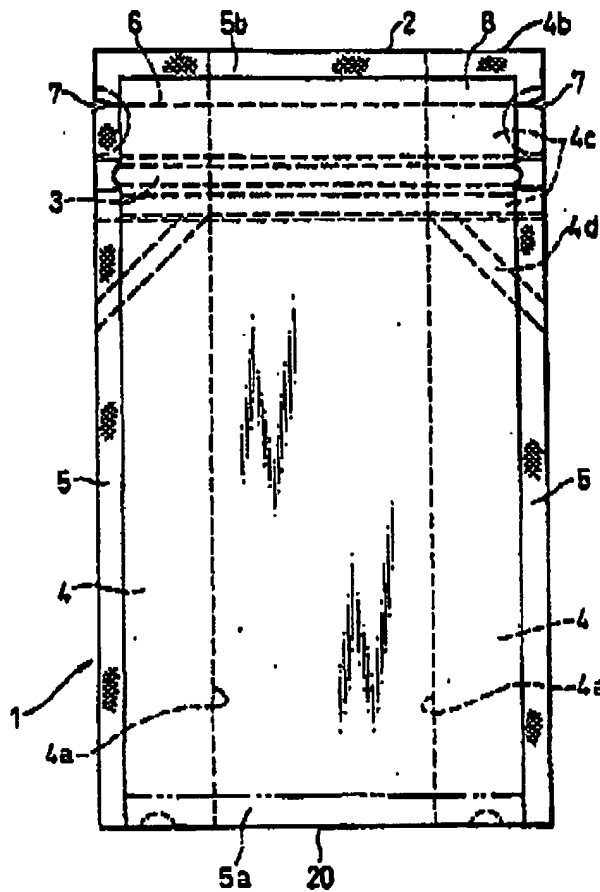
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FIG. 20



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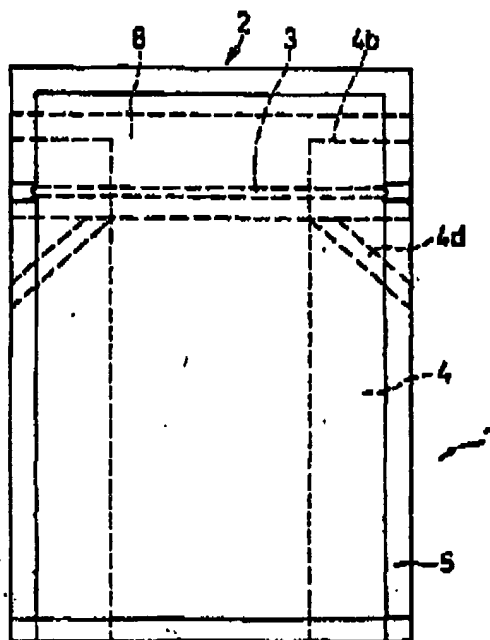
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FIG. 21



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17/03/2005 18:35

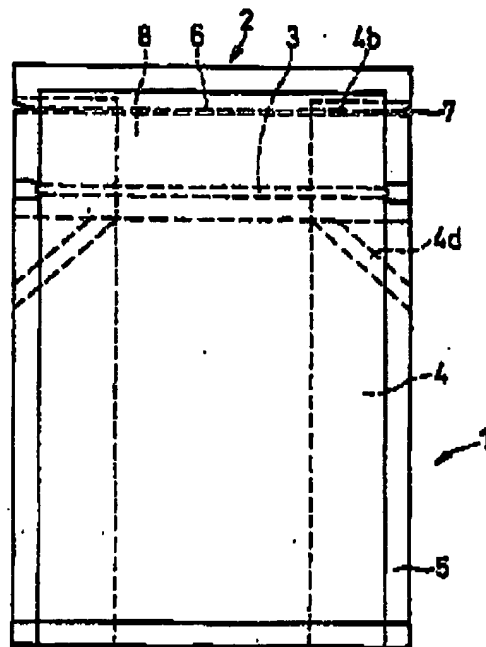
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FIG.22



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FIG. 23

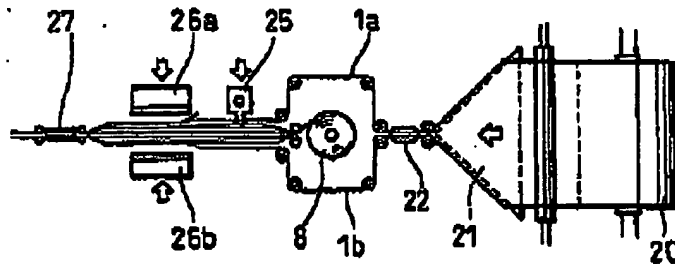
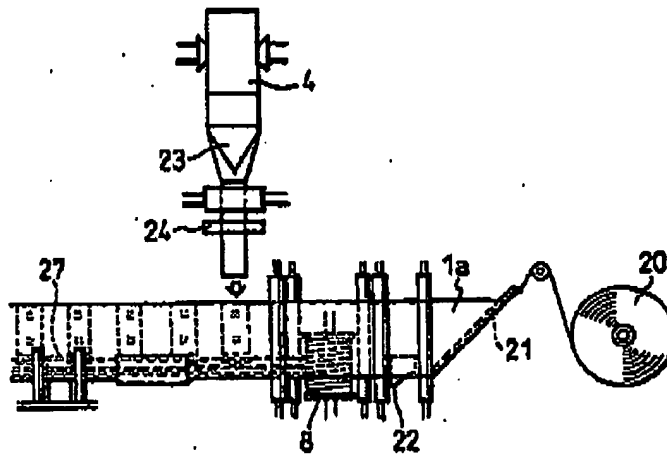


FIG. 24



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PAGE 68/68 \* RCVD AT 3/28/2006 5:03:53 PM [Eastern Standard Time] \* SVR:USPTO-EFXRF-3/10 \* DNIS:2738300 \* CSID:3172369907 \* DURATION (mm:ss):17-02

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